

CLAIMS

1. A complex switched-current bilinear integrator comprising, first
5 and second inputs for a differential pair of in-phase input signals, third and
fourth inputs for a differential pair of quadrature-phase input signals, first and
second outputs for a differential pair of in-phase output signals, third and fourth
outputs for a differential pair of quadrature-phase output signals, coupling the
inputs and outputs an arrangement of sample-and-hold circuits and coupled
10 scaling circuits, and means for dynamic element matching whereby at least
some of the scaling circuits are interchanged according to a predetermined
switching sequence and whereby a change of scaling circuit coupled to any of
the sample-and-hold circuits occurs at the beginning of a sampling operation
by that sample-and-hold circuit.

15

2. A complex switched-current bilinear integrator as claimed in
claim 1, wherein the arrangement of sample-and-hold circuits and coupled
scaling circuits provides means for integrating signals present at each of the
first second third and fourth inputs, means for scaling each of the integrated
20 signals by a first scale factor, means for scaling the integrated signals by a
second scale factor, and means for coupling the integrated signals scaled by
the second scale factor to the inputs whereby the in-phase and quadrature-
phase signals are cross-coupled.

25 3. A complex switched-current bilinear integrator as claimed in
claim 2, wherein at least some of the scaling circuits applying the first scale
factor are interchanged or at least some of the scaling circuits applying the
second scale factor are interchanged.

30 4. A complex switched-current bilinear integrator as claimed in
claim 2, wherein at least some of the scaling circuits applying the first scale

factor are interchanged and at least some of the scaling circuits applying the second scale factor are interchanged.

5 5. A complex switched-current bilinear integrator as claimed in claim 4, wherein the interchanging effects averaging of four first scale factors and/or effects averaging of four second scale factors.

6. A complex switched-current bilinear integrator as claimed in claim 5, wherein the predetermined switching sequence has a repetition period
10 of four of the sampling operations.

7. A complex switched-current bilinear integrator as claimed in any one of claims 2 to 6, wherein the means for integrating comprises a pair of the sample-and-hold circuits alternately performing a sampling operation and
15 alternately performing a holding operation, and wherein the sampling operation comprises sampling simultaneously a signal present at one of the inputs and a signal held concurrently by the other sample-and-hold circuit of the pair.

8. A complex switched-current bilinear integrator as claimed in
20 claim 7, comprising a switching means for swapping signals at the first and second inputs and for swapping signals at the third and fourth input, the swapping being synchronous with the alternating sampling operation and holding operation of the sample-and-hold circuits coupled to the respective inputs.

25

9. A filter comprising a complex switched-current bilinear integrator as claimed in any one of claims 1 to 8.

10. A radio receiver comprising the filter as claimed in claim 9.

30

11. An integrated circuit comprising a complex switched-current bilinear integrator as claimed in any one of claims 1 to 8, or the filter as claimed in claim 9, or the radio receiver as claimed in claim 10.

5 12. Apparatus comprising a complex switched-current bilinear integrator as claimed in any one of claims 1 to 8.